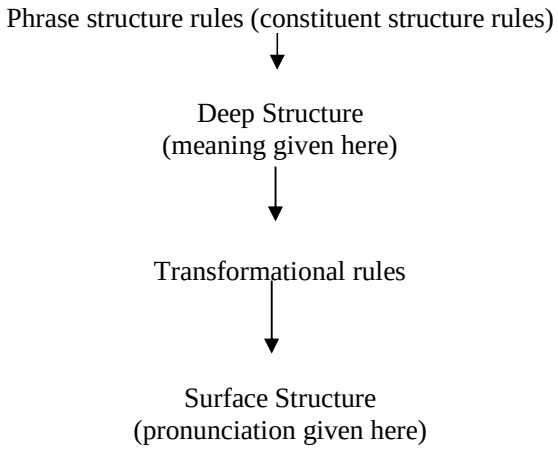
# CHAPTER 8
# ENGLISH SYNTAX

We have discussed earlier in Morphology that morphemes are the building blocks that go to make up words. But English is not just a collection of words. Words are put together to form sentences. The way in which words are put together to form sentences is called the syntax of the language. In short, **syntax** is the way how the words are put together to form phrases and sentences. In other words, syntax is the study of the structure of sentences. To study syntax is to study the patterns and relationship of words, phrases and clauses. Syntax attempts to uncover the underlying principles, or **rules** for constructing well-formed sentences.

There are two types of rules in syntax: **phrase structure rule** and **transformational rules**. **Phrase structure rules** attempt describe the internal composition of syntactic units; i.e. sentences and phrase, showing what kinds of smaller units they are made up of. It also describes the ordering between these smaller components. For example, a rule of the form S → NP+VP can be interpreted as 'a sentence can consist of the component units NP (a noun phrase) and VP (a verb phrase), which are ordered in the way stated'. Phrase structure rules are also called **constituent structure rules** because

words, phrases, and sentences can all be constituents in larger combination. **Transformational rules** attempt to recognize the well-formed sentence and which sentences are related to each other. Transformational rules consist of **deep structure** and **surface structure**.

The grammar resulted by these two rules can be schematized as follows:




## Parts of Speech

Part-of-speech is basic unit of sentence. To understand sentence structure, we must learn to recognize these basic units. Recognizing these parts of speech can be used two approaches; that is; traditional and descriptive. The traditional approach use intuition to determine them; whereas, descriptive approach uses formal properties of language (morphological and syntactic) to recognize them.

In traditional approach, there are eight parts-of-speech, namely:

a. **noun (N)**; a word which names a person, place, or thing. (e.g. Tom, Buffalo, motorcycle)
b. **pronoun (PRO);** a word which can replace a noun., (e.g. he, it)

c. **adjective (ADJ);** a word which modifies a noun, (e.g. handsome, busy, sleek)
d. **verb (V);** a word which names an action or a state of being (e.g. run, hit, is)
e. **adverb (ADV**); a word which modifies a verb, adjective, or adverb, (e.g. quickly, very)
f. **preposition (P);** a word which shows some relationship between a noun/pronoun and another word in a sentence, (e.g. in, on, from, by, to)
g. **conjunction (CONJ);** a word which connects words or phrases, (e.g. and, but, or)
h. **interjection (INTERJ);** a word used as an exclamation, (e.g. oh, ah, well, yeah)

Despite the fact that these definitions are clear-cut and easy to learn, identifying a word based on them can be difficult. Consider the "painting". Is it a noun referring to an object, or is it a verb referring to an action? The answer we decide upon depends on context:

a. I hung the *painting* on the wall
b. We have been *painting* the house for days

In (a), "painting" is a noun, but in (b) it is a verb. We cannot attempt to accurately identify a word's parts of speech in isolation. Instead, we must consider the word's function in a whole sentence. Because of this constraint, the descriptive approach seems better than this one.

The descriptive approach offered by structuralists provide the division of parts of speech into two broad classes, that is, open classes and closed classes. The open classes include **nouns, verbs, adjective** and **adverbs**. Each class can be defined by formal, distributional features which we can classify as morphological and syntactic frames. Morphological frames help identify a lexical class by stating the type of morphemes that can be attached to each word in a class. Syntactic frames state the type of words that can precede or follow each word in a class.

## Noun (N)

Nouns (N) have two morphological frames: the plural and the possessive. In general, a plural noun will have an *–s* or an *–es* ending and a possessive noun will have an *–s* ending. Pronouns, a subclass of

nouns, have subject and object inflected forms as well as plural and possessive:

| | subject | | object | |
|---|---|---|---|---|
| | sing | plural | sing | plural |
| 1st person | I | we | me | us |
| 2nd person | you | you | you | you |
| 3rd person | he, she, it | they | him, her, | it, them |

| | possessive | |
|---|---|---|
| | sing | plural |
| 1st person | my | our |
| 2nd person | your | your |
| 3rd person | his, her, its | their |

Syntactic frames for nouns include precedence by determiners, possessive pronouns, and adjective:

| | |
|---|---|
| the boy | (det N) |
| my book | (poss. PRO N) |
| brown jacket | (ADJ N) |

## Verbs (V)

Verbs have two morphological frames; they can be inflected for number and tense. Number of agreement only appears in the present tense, an *–s* ending marking the 3rd person singular form:

| | | |
|---|---|---|
| a. | I hit a dog | *I hits a dog |
| b. | You hit a dog | *You hits a dog |
| c. | *John hit a dog | John hits a dog |
| d. | We hit a dog | *We hits a dog |
| e. | You (pl.) hit a dog | *You hits a dog |
| f. | They hit a dog | *They hits a dog |

As for tense, English has three basic tenses: present, past, future.

| | present | past | future |
|---|---|---|---|
| a. | I crack<br>He cracks | I cracked<br>He cracked | I will crack<br>He will crack |
| b. | I hit<br>He hits | I hit<br>He hit | I will hit<br>He will hit |

The regular method of creating the past tense is to add *–ed* to the verb, but as (b) shows, there are regularities. Future tense is not formed by inflection, but by using the auxiliary verb *will*. Other tense forms, such as the progressive and perfect forms, are formed from both inflectional suffixes and auxiliary verbs. The progressive usually indicates that an action is unfinished at the time refereed to. Thus, there is a present progressive, *I am eating (now)*, a past progressive, *I was eating (when you arrived)*, and a future progressive, *I will be eating*. We form the perfect with the AUX *have*, attaching *–ed* or *–en* to the main verb. Syntactically, verbs should follow subject nouns and precede object nouns:

a. The cat meowed (det N V)
b. She hit the ball (N V det N)

Finally, verbs may be first word in imperative sentences:

a. Answer the phone!
b. Borrow that book!

For polite request, rather than orders, the verbs may be preceded by *Please*.

## Adjective (Adj)

Adjective (Adj) have morphological frames for the comparative and superlative degrees, *-er* and *–est* respectively:

a. happy, happier, happiest
b. good, better, best

(a) illustrates the regular formation of the comparative and superlative whereas (b) illustrate an irregular form.

Adjective (Adj) have two syntactic frames. They may precede nouns or follow linking verbs.

a. the young penguin (det Adj N)
b. the penguin is young (det N V ADJ)

## Adverb (ADV)

Adverbs (ADV) have two the most commonly known morphological frames; adverbs are marked by an *–ly* ending, such as: *quickly, happily, sadly*. Unfortunately, a number of adjectives may also have this *–ly* suffix, such as *manly, queenly, kingly, princely, slovenly,* etc. Adverbs themselves may have different endings: *-ward, -wards, -wise* to name few, such as *westward, forward, sexwise*.

Adverbs may also be difficult to identify using a syntactic frame because they have a tendency to be movable: that is, they may appear almost anywhere in the sentence.

a. Anxiously, the bride went to her wedding.
b. The bride anxiously went to her wedding
c. The bride went anxiously to her wedding.
d. The bride went to her wedding anxiously

When trying to identify adverbs, sometimes it is simpler to figure out that they are not nouns, verbs, or adjectives.

Closed class words, better known as **function words**, are those which have little meaning outside of their grammatical purpose, to relate from class words to each other. They include determiners (DET), auxiliary verbs (AUX), preposition (P), and conjunctions (CONJ).

**Determiner (DET)** signal that a noun is following, such as *The sky is falling*. **Auxiliary verbs (AUX)** often indicate tense and aspect as we saw in our discussion of verbs. **Prepositions** begin prepositional phrases which act as adjectival or adverbial phrases:

a. The man *with the beard*
b. I ran *to the store*

Finally, **conjunction** (such as *and, but, or*) join words and phrases:

a. Bill *and* Sue went to a movie
b. Sue work hard, *but* she enjoys her job
c. Joyce drives a car *or* rides her bike to school.

## Syntactic Categories

A very important fact about constituent structure is that there are different types of constituents with very different uses. We refer to these different types of constituent as *syntactic categories*, as follows:

## Noun phrase (NP)

Noun phrase (NP) is the most important syntactic categories, for examples:

John
mailmen
most students
many Americans
a huge, loveable bear
a student from brazil
the table in the corner
the people we interviewed
John and his friends

A Noun phrase can be used as the subject of a sentence as in (a); as direct object as in (b); as indirect object as in (c); and many other ways as well:

a. *Most students* enjoy bakso.
b. He likes *most students*
c. The Dean gave *most students* their books this morning.

In some cases, a single word can count as a noun phrase all by itself; this is true, for instance, of names (e.g. John), plurals nouns (e.g. *mailmen*), nouns referring to substances (e.g. *water*, *dirt*), and pronouns (e.g. *I*, *she*, *them*). But many noun phrases begin with expressions like the following:

| | | |
|---|---|---|
| the | most | at least five |
| a | all | my |
| every | few | Mary's |
| many | several | |
| some | three | |

These are called *determiners*, and they combine with a single noun or with a noun modified by other sorts of expressions to produce a noun

phrase: *the president, many Americans, two new sweaters, a student from Brazil,* etc.

## Verb Phrase (VP)

Verb phrase is another extremely important syntactic category. Some examples are the expression as in the following:

snore
like marry
give a prize to john
believe that dogs are smart
want to leave
sleep soundly
can lift 100 pounds
is wearing sunglasses
go home and have a sleep

A verb phrase can be used as the predicate of a sentence, as in the example below:

a. John and Bill *like English*
b. Henry *wants to leave*

Certain verbs, such as *snore, swim, talk,* and *die*, can form a verb phrase all by themselves; verbs of this sort called *intransitive verbs*. Certain other verbs form a verb phrase by combining with a noun phrase. Such verbs are called *transitive verbs*; the noun phrase with which a transitive verbs combines is its direct object, as in the following examples:

like Mary
chase cars
annoy three burly sergeants
develop every roll of film

Other verbs combine with other sorts of expressions to form a verb phrase: verbs like *give* and *owe* combine with two noun phrases (a direct object and an indirect object), as in *give a prize to John* and *owe Larry's brother several hundred dollars*; verbs like *try* and *manage* combine with verb phrase marked with *to*, as in *want to leave* and *manage to finish the pizza*; and so on.

Certain verb phrase consists of an *auxiliary* or *helping verb* (e.g. *can, should, might, will, be, have*) plus a smaller verb phrase: *can lift 100*

*pounds*, *should wear sunglasses*, *might want to leave*. When the helping verb is *have* the verb which follows it is in its past participle form: *John has chopped the onions*, *Henry has found the wallet*. When the helping verb is *be*, the verb which follows it may be in its past participle form or in its present participle form:

a. The onions were chopped by John
b. The wallet was found by Henry (passive sentence)
c. John is chopping the onions.
d. Henry is finding the wallet.

## Adjective Phrase (ADJ P)

Adjective phrase is also important syntactic categories, as the examples below:

smart
very fat
as crazy as John
more intelligent than Mary
certain to win

It is used to modify nouns and thus often appear as constituents of a noun phrase: a *very fat individual; someone as crazy as John*

### Adverbial Phrases (ADV P)

Adverbial phrases are often used to modify verbs or adjective, as shown in the following example:

soundly
fiercely
as fluently as John
almost certainly
sleep soundly

Adverb phrases also appear as constituent of verb phrases and adjective phrase, as follow:

speak French as fluently as John (verb phrase)
fiercely loyal
almost certainly able to walk (adjective phrase)

**Prepositional Phrase (PP)**

Prepositional phrases always consist of a preposition (e.g. *to, from, with, for, at, on, under, about, through*) plus a noun phrase:

from Brazil
with John and Bill
for nothing

**A prepositional phrase** can be a constituent of a wide range of expressions:

go to the movie (verb phrase)
a student from Brazil (noun phrase)
angry with John and Bill (adjective phrase)
separately from others (adverbial phrase)

## Sentence

Traditionally, grammars define a sentence in such terms as 'the complete expression of a single thought'. Modern studies avoid this emphasis, because of the difficulties involved in saying what 'thoughts' are. *An egg* can express a thought, but it would not be considered a complete sentence. *I shut the door, as it was cold* is one sentence, but it could easily be analyzed as two thoughts.

Some traditional grammars give a logical definition to the sentence. The most common approach proposes that a sentence has a 'subject' (=the topic) and a 'predicate (= what is being said about the topic). This approach work quite well for some sentences, such as *The book is on the table*, where we can argue that *the book* is what the sentence is 'about'. But in many sentences, it is not so easy to make this distinction. *It's raining out* is a sentence, but what is the topic? And in *Michael asked Mary for a pen*, it is difficult to decide which of Michael, Mary, or pen is the topic-- or whether we have *three* topics.

In some written languages, it is possible to arrive at a working definition of 'sentence' by referring to the punctuation one is taught to use in school. Thus, English sentence for many people 'begin with a capital letter and end with a full stop' (or some other mark of final punctuation). The problem is that many languages (e.g. in Asia) do not make use of such features; and even in those that do, punctuation is not always a clear guide.

It is even more difficult to identify sentences in speech, where the units of rhythm and intonation often do not coincide with the places where full stop occurs in writing. In informal speech, in particular, constructions can lack the careful organization we associate with the written language. It is not that conversation lacks grammar; it is simply that the grammar is of a rather different kind, with sentences being particular difficult to demarcate.

Despite all the difficulties, we continue to employ the notion of 'sentence', and modern syntacticians try to make sense of it. But they do not search for a satisfactory definition of 'sentence' at the outset. So, in other words, no definition was necessary; sentences were recognized to sentences intuitively.

## Sentence Types

Generally, there are three types of sentences, that is (1) simple sentences, (2) compound sentences, and (3) complex sentences.

## Simple sentence

A simple sentence consists of a single clause; a clause contains a single verb (or predicate). The following are examples of simple sentences:

a. Dan washed the dishes
b. Karim assemble a new grill
c. Joe cooked the hot dog
d. Denise will buy a new rain coat this fall
e. Her uncle had put the gifts in the car.

Each of these sentences contain only one verb, but you can see that a verb itself can consist of a single word (as in *washed*, *assemble*, *cooked*) or of more than one word (as in *will buy*). The clauses just cited are called sentences because they stand independently as sentences; if they were incorporated into other sentences, they would be called *clauses*. In English and many other languages, the central element in a clause is the verb; each clause--and therefore each simple sentence--contains just one verb.

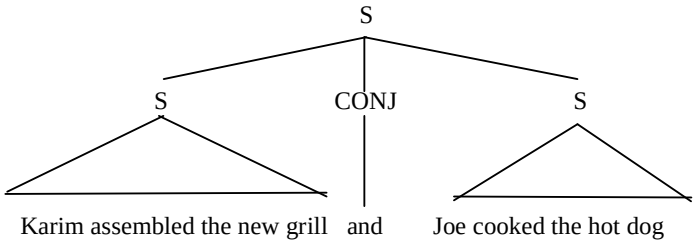
## Compound (Coordinate) Sentences

Two clauses can be joined to make a coordinate sentence, as in these examples:

a. Karim assembled the new grill and Joe cooked the hot dog
b. Denise bought a new coat but she didn't wear it often.

A coordinate sentence consist of two clauses joined by a word such as, *and*, *but*, and *or*, which called *coordinating conjunction*, or *simply conjunction*s. Conjunctions can be used to join sentences (as in a and b), but they can also join other constructions; for examples, nouns in *trick* ***or*** *treat*; verbs in *trip* ***and*** *fall*; adjective as in *slow* ***but*** *sure*. To repeat a point made in the preceding section, when clauses are combined to form a single sentence we generally reverse the word *sentence* for larger structure and refer to the structures that make it up as *clauses*.

The clauses in coordinate sentence hold equal status as parts of the sentence; neither is part of the other one, and each could stand by itself as an independent sentence. The following figure represents the structure of a coordinate sentence and illustrates the equivalent status of the clauses (called *coordinate clauses*). We use the label S for both the whole sentence and for each coordinate clause in it; CONJ stands for conjunction.




## Complex Sentence

Complex sentences are formed by incorporating clause(s) into another clause. Embedded clause is a clause that is embedded or incorporate into another clause to form complex sentence. The clause *Dan washed the dishes* can be incorporated into another clause to produce sentence *Sue said Dan washed the dishes*. In each of the following examples,

the underlined portion is a clause that is incorporated (or embedded) into another clause:

a. Sue said Dan washed the dishes
b. That the runner from Ohio won the marathon surprised me.
c. She is wondering whether Denise will buy a new raincoat.
d. She didn't suspect a party until her uncle put the gifts in the car.
e. It was clear that the patient should have received a refund.

In sentence (a), the clause *Dan washed the dishes* is embedded into the clausal structure *Sue said___*. The clause *Dan washed the dishes* functions as the direct object of the verb *said*. It is thus functionally equivalent (though not semantically equivalent) to the word *something* in the sentence *Sue said something*; both are direct objects. In (b), the clause *That the runner from Ohio won the marathon* is embedded into the clausal structure ---- *surprise us*. In this case, the embedded clause in (b) (*that the runner from Ohio won the marathon*) is grammatically equivalent to *It* in *It surprised us* or to *The news* in *The news surprised us.* In (c), the clause *whether Denise will buy a new raincoat* is embedded into the clause *She is wondering* _____: it serves as a complement to the verb *is wondering*.

Complex sentence sometimes is introduced by subordinators. In most of the examples given, the embedded clause is introduced by a word that would not occur there if the clause were standing as an independent sentence: words like *that* in (b) and (e), *whether* in (c), and *until* in (d). When a clause is embedded into another clause, it is often introduced by such subordinator. **Subordinators** serve to mark the beginning of an embedded clause and to help identify its function in the sentence. Not all embedded clause must introduced by a subordinator, although in English they usually can be. Compare these sentence pairs:

a. Sue said that Dan washed the dishes
b. Sue said Dan washed the dishes
c. That she won surprised me.
d. *She won surprised me

Notice that (a) and (b) are well formed with or without the subordinator. But of the pair (c) and (d), only (c) is well formed. (The asterisk preceding (d) indicates a structure that is not well formed.)

## Major Constituent of Sentence: NP and VP

Look at the following examples:

a. {Alex}{swims}
b. {The dog} {is barking}
c. {Jennifer} {said something}

In general, simple sentences (and therefore clauses) consist of two principal constituents. In each of the preceding examples, the constituent on the left is called and NP (for Noun Phrase), and the one on the right is called a VP (for Verb Phrase). Each NP contains a noun (or pronoun). Each VP contains a verb. Each NP is a referring expression; each VP makes a predication. We identify NPs and VPs sometimes by slots they fill in a sentence and sometimes from their functions in the same way. Thus, *Alex* in sentence (a) and *the dog* in sentence (b) function in the same way; they are referring expression about which the predication in the sentence is made. Similarly, *swims* in (a) and *is barking* in (b) function alike in their sentences, they are predications made of an NP.

## Phrase Structure Rules

A phrase structure rule is a series of rewrite rules. These rules break down sentences, establishing their basic structures, regardless of the final form the sentences may take after transformational rules have applied. Each rules in a phrase structure rule have the form: which means "X consists of Y and Z". The first phrase structure rule, for instance, is:

$$S \rightarrow NP + Aux + VP$$

Which means that a sentence consists of a noun phrase (NP) followed by an auxiliary element (Aux) like tense that in turn is followed by a verb phrase (VP). Successive phrase-structure rules indicate what NP, Aux, VP, and other constituents in the sentence to account for.

No complete phrase structure rule for English has yet been fully accepted. It is possible that none ever will be; for the phrase structure rules depend in part on theories that underline them, and these change with the linguist and the year. A partial phrase structure rules and lexicon is given below:

*Partial Phrase Structure Rules*

1. S → NP + Aux + VP
2. NP → (Det) + N
3. Det → Lex[Det]
4. N → Lex[N]
5. Aux → Tense + (M) + (Perf) + (Prog)
6. VP → { V + (NP) + (PP) ; be + { Adj ; NP ; PP } }
7. Tense → { Pres ; Past }
8. M → Lex[M]
9. Perf → *have* + *-en*
10. Prog → *be* + *-ing*
11. V → Lex[V]
12. PP → Prep + NP
13. Prep → Lex[Prep]
14. Adj → Lex[Adj]

*Partial Lexicon*

a-- Lex[Det]
g*irl* -- Lex{n}
c*an* – Lex[M]
h*appy*--Lex[Adj]
*man* – Lex[N]
*see* – Lex[V]
*the* – Lex [Det]

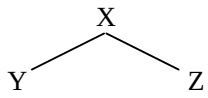
*Abbreviation*

S – sentence
NP – noun phrase
Aux – auxiliary
VP – verb phrase
Det – determiner
Lex – lexical
M – modal
Perf – perfect
Prog – progresif
Adj – adjective
PP – prepositional phrase
Pres -- present
Prep -- preposition

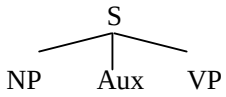
*Notational Convention*

→ means “consist of”
(X) means “X is optional”
{ X ; Y } means “choose between X and Y”
Lex[X] means “ a lexical item marked X”

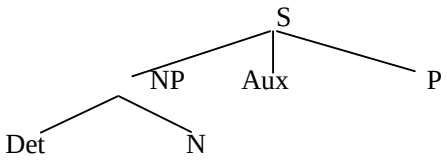
We can use the phrase structure rules above to generate the deep structure of some sentences. To illustrate how the deep structure is generated, we can use a tree diagram. The relationship between the phrase structure rules and a tree diagram is quite strict; a phrase structure rule of the form X→ Y + Z matches the tree



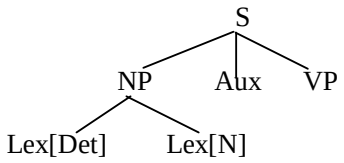

Let us generate the deep structure underlying the sentence *A girl has seen the man*. Rule 1, which starts with the abstract concept of the sentence (S), generate as NP, an AUX, and a VP:



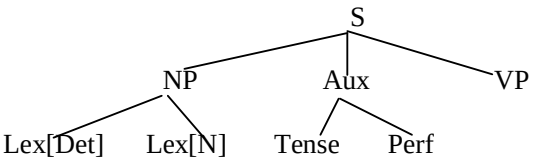

The NP, according to the rule 2, consist of a noun (N) and an optional determiner (Det); *determiner* refers to such words as *a, the,* and *some*. In this case, the option of including a determiner is used. Thus, we get



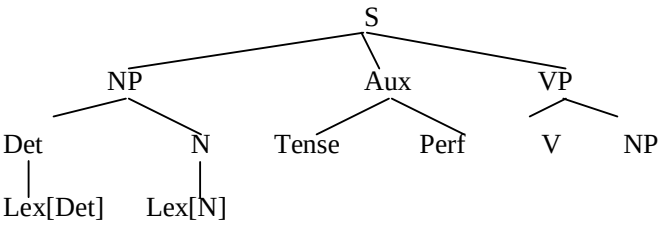

Rule 3 and 4 indicate that Det is rewritten as Lex[Det] and N is rewritten as Lex[N]. Thus,



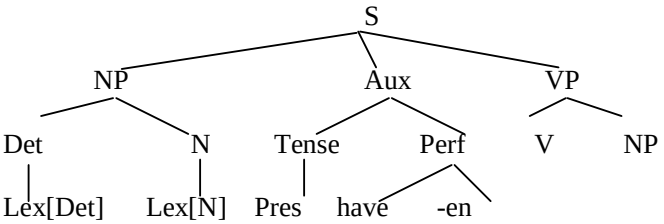

By rule 5, Aux consists of Tense and may include other elements; in this case, Aux is Tense plus the perfect construction (Perf).



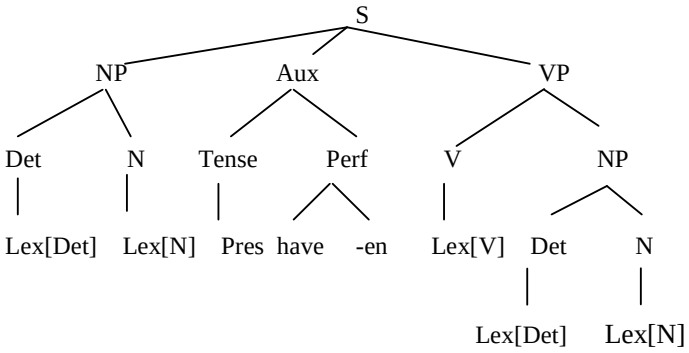

Rule 6 looks rather complicated, but if the notational convention of the phrase structure rule above are observed, it is easily understood. Since, for this sentence, we wish to generate a verb and a noun phrase, we choose the first line of the rule: V + (NP) + (PP). From this line, we select the obligatory V and the optional NP, and we exclude the optional PP, since there is no prepositional phrase in our sentence. After the application of Rule 6, the structure look like this:



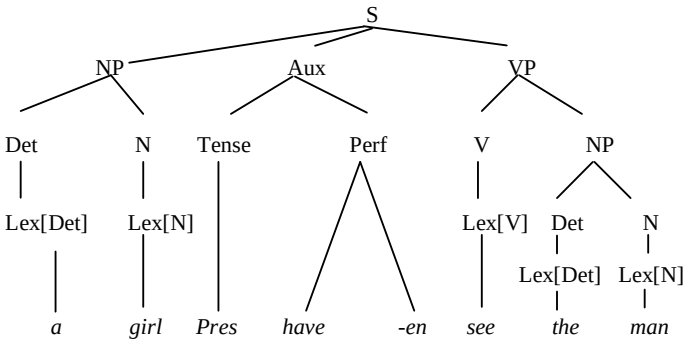

By Rule 7, Tense is rewritten as Present; and by Rule 9, Perf is rewritten as *have* and *–en* is the linguist's notation for the ending on the past participle of the verb (which may be *–en*, as in *broken, -ed* as in *typed*, or nothing at all, as in *put*). Thus, we get




According to Rule 11, V consists of a lexical item marked Lex[V]. We also apply Rules 2, 3, and 4 to the NP at the far right. Thus,




Next, we consult the lexicon in the phrase structure rules above to rewrite Lex[Det], Lex[N], and lex[V]. We find that the words *a* and *girl* are Lex[Det] and Lex[N] as in the first NP; the word *see* meets the requirement of Lex[V]; and the words *the* and *man* meet the requirements of Lex[Det] and Lex[N] as in the second NP. The insertion of these lexical items give the following:




The final tree is the deep structure: no further phrase-structure rules or lexical substitutions may operate. Deep structure, then, consists both of the ordered words and terms at the bottom of the tree and the tree itself, which is sometimes called a **phrase-structure marker**.

The deep structure string *a girl Pres have –en see the man* is obviously not a sentence yet; it must undergo certain transformations before it will take final form. The purpose of phrase structure rule is

only to provide a description of the structures that underline grammatical sentences. The phrase structure rule, then, is a model of competence that does not attempt to incorporate the speaker's intentions, important though those intentions are. What we have done is to extract one particular sentence from the grammar for the purpose of analysis.

## Transformation Rules

In the phrase structure rule the generating of deep structures was examined. In this transformation rule, we look at the transformations that deep structure must go through in order to take the form of surface structure, the actual utterance. With the addition of this transformational rule, we can generate the actual sentences of a language; we can also clarify the relationship between sentences and their meanings. But these rules should also do something else; they should avoid the generating of ungrammatical sentences. To meet this criterion, it is necessary that we also define certain constraints on the transformational rules.

Transformations are operations that add, delete, or change elements in one structure to produce another structure. According to this definition, the insertion of a lexical item into phrase-structure tree might be considered a transformation because it introduces (or add) a complex element into a structure, whereas the phrase structure rules simply reanalyze, or break down, sentence structures. Nevertheless, we will refer to the transformational component as all the rules that apply *after* all lexical items have been inserted into tress.

We need transformations for several reasons. One of them is relation between words in sentence, known as co-occurrence restriction, that is restrictions on the relations between words that apply to different types of sentences. Second, transformations may simplify a grammar and increase its ability to describe language. More importantly, because they relate deep and surface structures, transformational rules are able to express certain generalizations that are part of the speaker's knowledge about his or her language. The relationships between deep and surface structure is in no way arbitrary. The fact that the two levels of structures are posited at all results from the principle that one of the purposes of a grammar is to account for the relationship between sentences and their meanings.

## Deep Structure, Surface Structure and Meaning

The structuralist had been concerned strictly with the surface characteristics of sentences and had, therefore, worked with only one level of description. The transformational-generative grammarian recognizes that there is no one-to-one relationship between sentences and meanings. In fact, a particular meaning can be represented by several different sentences, or pharaprases; and a particular sentence might be ambiguous, or have several meanings.

An example of several paraphrase of one basic meaning is the following set of sentences:

1. Mary gave an apple to Bob.
2. Mary gave Bob an apple.
3. An apple was given to Bob by Mary.
4. Bob was given an apple by Mary.
5. It was Mary who gave Bob an apple.
6. Bob is the one Mary gave an apple to.

These sentences (among others) all have the same basic meaning and are assumed to derive from one deep structure. This deep structure may be affected by different rules in the transformational component, and the different rules create variations in surface structure, as shown by different sentences that result.

### Two Obligatory Transformations

One transformation applied to all sentences is the **flip-flop (FF) rules**, by which certain endings are attached to the verbal forms that follow them. The flip-flop rule may be generalized as:

FF rule : Affix + Verbal $\Rightarrow$ Verbal + Affix
Condition : Constituents affected by FF may undergo the rule only once.

*Affix* may be Tense, *-en,* or *–ing*. *Verbal* may be V, M, *be* or *have*, (double stems arrows, $\Rightarrow$, signify a transformational rule). For an example of how the rule operates, consider the deep structure presented in last diagram tree may operate at two points: at Pres + *have* and at *–en + see*, which are in the correct order for application of the rules. Thus:

Deep structure : *a girl* Pres *have –en see the man*
After FF : *a girl have* Pres *see –en the man*

Notice that we imposed the condition that the FF rule can apply to each relevant constituent only once: otherwise, there is nothing to prevent Pres + *see* from being flip-flopped. This condition thus prevents the generating of such an ungrammatical sentence as **A girl have sees –en the man*.

As the FF rule illustrates, the statement of a transformation involves two parts: a structural description and a structural change. The **structural description** specifies the structure that must be present in order for the rule to apply (for example, Affix + Verbal). The **structural change** indicates how the structure is affected by the rule (for example, ⇒ Verbal + Affix). Conditions on the application of the rule may or may not present, and linguists have recently been working hard to eliminate conditions wherever possible.

It is also important to note that Affix and Verbal, as stated, are somewhat artificial categories, since they do not appear in the deep structure tree. We use these categories because they allow us to state the rule more easily; nevertheless, their use must be considered a flaw in the theory, which ultimately must be corrected.

After the application of FF, only one other rule need be invoked to transform the deep structure above. This rule, which may be called the **lexical-formation (LF) rule**, requires that the lexicon be consulted to determine the final appearance of the nouns and verbs in words of the surface structure; it tells us that *have* + Pres is *has* in the third person singular and *have* otherwise and that *see* + *-en* is *seen*, as follows:

By LF: *a girl has seen the man.*

The FF and LF rules are the only transformational rules that must be applied in order to derive *all* surface structure. Of course, many other transformational rules apply under certain conditions. Ideally, the conditions of application should be apparent in the deep structure, although it does not always work out well.

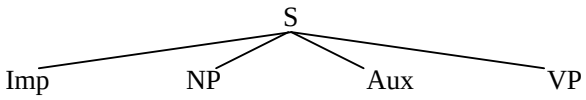
## Imperative, Questions, and Negations

The formation of imperatives, questions, and negations involves operations that are signaled by constituents in the deep structure. The first rule of the phrase structure rule must be altered at this point to introduce these constituents:

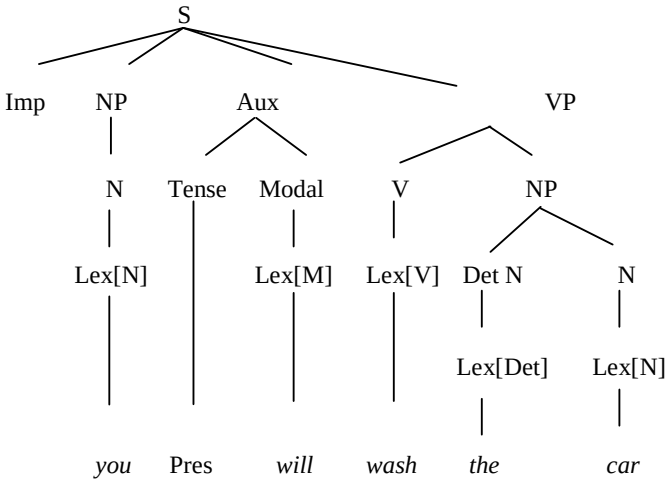
$$S \rightarrow \left\{ \begin{matrix} Imp \\ Quest \end{matrix} \right\} + (Neg) + NP + Aux + VP$$

In other words, a sentence still consist of an NP, an Aux, and a VP; but it may also optionally be a question, an imperative, a negative, a negative question, or negative imperative. Because Imp, Ques, and Neg are optional, it is still possible that none is realized, in which case the sentence will be declarative and positive.

Consider how the imperative sentence *Wash the car!* is generated. The underlying or deep structure for this sentence must include the constituent Imp, the subject NP *you*, the Modal *will*, and the present tense. This analysis is supported by the existence of a sentence like *Wash the car, won't you?*, in which *you* and *will* "surface". Further the evidences such as *Watch yourself*. The first phrase structure rule will now produce the structure:




The application of all other relevant phrase structure and lexical insertion rules will produce the deep structure as follows:




The constituent Imp then triggers the imperative transformation, which has the following effect:

Imperative transformation: Imp + *you* + *will* ⇒ Ø

In other words, the constituents Imp, *you*, and *will* are deleted. The FF rule then switches the order of the constituents Pres + *wash*, giving *wash* + Pres. The LF rule then tells us that *wash* + Pres is *wash*, thus generating the sentence *Wash the car*!

## Transformations with Embedded Sentences

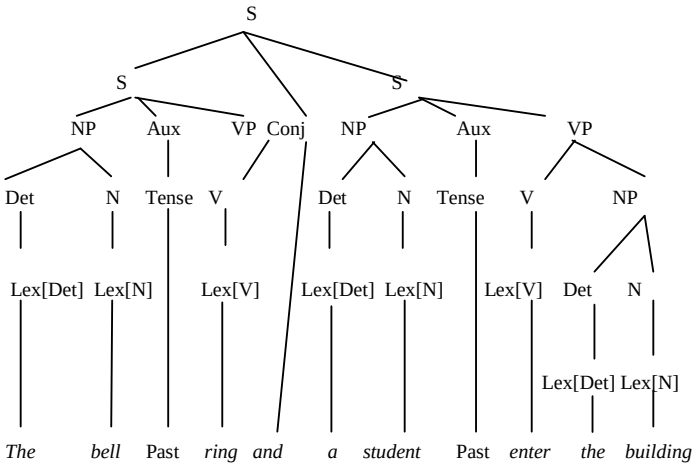
Look at the following sentence:

(a) The bell rang and a student entered the building

In order to generate sentences like this, we need the modified phrase structure rule:

S → S + (Conj + S)

Where *Conj* represents *and*, *or,* and so on. Thus, the deep structure of sentence (a) would appear as follows:



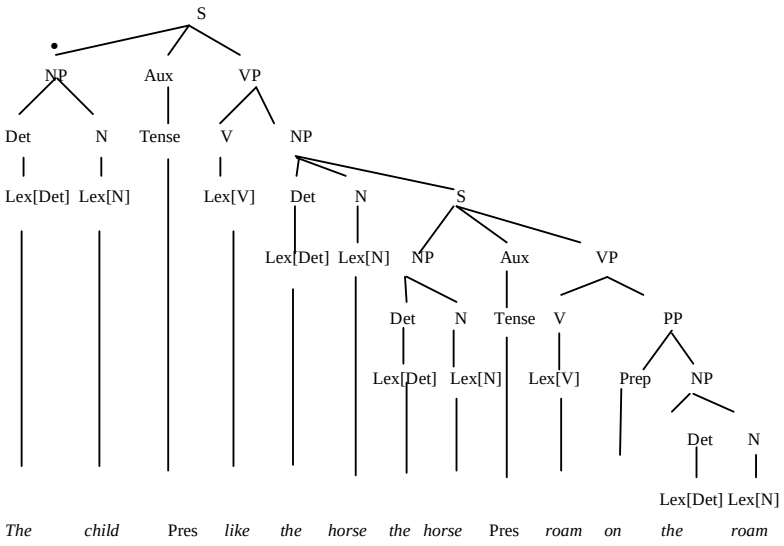

(b) The child likes the horse that roams on the farm

Phrase structure rule 2 must be revised as follows;

NP → (Det) + N + (S)

The sentence (b) is contained within another. The sentence *The horse roams on the farm* appears under the category label S, which appears directly under the category label NP. Such a sentence is called **embedded sentence**.

In both revised phrase-structure rules, the symbol S appears to the right of the arrow, allowing simple sentences to be contained within more complex sentences.




This deep structure is transformed into sentence (b) through the application of the **relative transformation**, which moves the second, identical occurrence of the NP *the horse* out of the embedded sentence to the position of *the horse* in the main sentence, leaving only one occurrence of *the horse*. Then an appropriate relative pronoun__ in this case *that* __ is substituted into the position from which the second occurrence of *the horse* was moved.